

Applicants: V. Potapov, et al.  
Appl. No. 09/581,317

B2  
cont.

a second substance provided on the first substance for preventing propagation of a sound wave in a direction opposite to a desired direction of radiation of the membrane.

18. (New) The ultrasonic transducer according to claim 17, wherein the single material is one of a) aluminum and b) an aluminum alloy.

19. (New) The ultrasonic transducer according to claim 17, wherein the holding means and the membrane form a pot-shaped structure.

20. (New) The ultrasonic transducer according to claim 17, wherein, in order to generate a center frequency of 70 kHz, the diameter of the membrane is  $8.85 \pm 0.02$  mm, the membrane has a thickness of  $0.83 \pm 0.02$  mm, and the piezoelectric disk has a thickness of  $0.26 \pm 0.01$  mm.

21. (New) The ultrasonic transducer according to claim 20, wherein the holding means is cylindrical with a wall thickness of at least 2.85 mm and a height of approximately 6 mm.

22. (New) The ultrasonic transducer according to claim 17, wherein the piezoelectric disk is glued onto the membrane.

Applicants: V. Potapov, et al.  
Appl. No. 09/581,317

*B2  
Cmt.*  
23. (New) The ultrasonic transducer according to claim 17, wherein the piezoelectric disk is a piezoceramic.

24. (New) The ultrasonic transducer according to claim 23, wherein the piezoceramic has a relative dielectric constant of greater than 2500, an electromechanic coupling factor of greater than 0.5, and a mechanical quality of less than 300.

25. (New) The ultrasonic transducer according to claim 17, wherein the first substance comprises at least one of a) a polyurethane foam and b) a silicon foam.

26. (New) The ultrasonic transducer according to claim 17, wherein the first substance comprises a polyurethane foam having a strain hardness of less than 9 kPa and an acoustical loss factor of less than 1.0.

27. (New) The ultrasonic transducer according to claim 17, wherein the piezoelectric disk has a first electrode forming a contact with the membrane and the holding means, and a second electrode forming a contact with a wire soldered to an edge of the piezoelectric disk.

28. (New) The ultrasonic transducer of claim 17, wherein the first substance is foamed

Applicants: V. Potapov, et al.  
Appl. No. 09/581,317

*B2  
Cncl 8.*  
onto the membrane such that the piezoelectric disk and the remaining surface of the membrane are completely covered by the first substance.

- 29  
Rv 1/26*
28. (New) A process for fabricating an ultrasonic transducer, comprising:  
fabricating a pot-shaped holding means having a bottom forming a membrane, the holding means being formed of one of a) aluminum and b) an aluminum alloy;  
gluing a piezoelectric disk onto one side of the membrane such that an electrical and mechanical contact is formed;  
soldering one end of a wire onto the piezoelectric disk;  
foaming a first substance in the holding means on the one side of the membrane such that the one side of membrane and the piezoelectric disk are completely covered by the first substance; and  
applying a second substance on the first substance to prevent propagation of a sound wave in a direction opposite to a desired direction of radiation of the membrane.